

# **Summary of Pinedale Anticline Chemical and Field Data 2000-2010**

**February 3, 2011**

## **Sublette County Conservation District**

Monitoring on the New Fork River by the Sublette County Conservation District (SCCD) began in 2000 prior to any exploration or development in the Pinedale Anticline Project Area (PAPA). Three sites (NF4, NF19 and NF30) were established on the New Fork River in 2001 to monitor the effects of the PAPA. With increased activity in the PAPA additional sampling sites were established:

- NF40 - established in 2004 to monitor any effects of Sand Springs and Alkali Draws on the New Fork River
- NF50 – established in 2007 downstream of the confluence of the East Fork River with the New Fork River
- NF60 – established in 2007 upstream of the confluence of the East Fork River with the New Fork River
- NF70 – established in 2007 downstream of the confluence of Pole Creek with the New Fork River
- NF80 – established in 2008 to represent a control site upstream of PAPA activity. NF80 replaced NF01 which was the original control site on the upper New Fork River for the PAPA.
- NF90 – established in 2010 to represent a control site upstream of PAPA activity. NF90 replaced NF80 due to drilling activity west of Pinedale and upstream of the location of NF80. NF80 will continue as a surface water monitoring site for the PAPA.

Surface water samples collected at the Pinedale Anticline (PA) sites are analyzed at an Environmental Protection Agency (EPA) certified laboratory. Each sample is analyzed for the following parameters: Alkalinity, Bicarbonate, Calcium, Carbonate, Chloride, Magnesium, Nitrogen, (Nitrate + Nitrite as N), Phosphorus, Sodium, Sulfate, Hardness, Total Dissolved Solids (TDS) and Total Suspended Solids (TSS). The Anions, Cations and Anion/Cation balance are calculated at the laboratory for quality assurance of data. Each sample is analyzed for BTEX (Benzene, Ethylbenzene, m+p-Xylenes, methyl-tertbutyl ether, o-Xylene and Toluene), Gasoline Range Organics (GRO) and Diesel Range Organics (DRO).

Duplicate samples are collected every 10<sup>th</sup> sample to ensure analysis is accurately conducted by the laboratory. Blank samples (using distilled water) are sent with every 10<sup>th</sup> sample as another quality control/quality assurance measure. Temperature blanks accompany every shipment of samples to ensure the samples remain under 4°C. (Sublette County Conservation District Pinedale Anticline Chemical Data 2000-2010).

Field data collected by Sublette County Conservation District staff include the following parameters: pH, Turbidity, Conductivity, Total Dissolved Solids (TDS), Temperature (C°) and Dissolved Oxygen (mg/L and %). Flows are measured when SCCD staff is able to safely do so. Photos are taken each time samples are collected as well as equipment used, personnel sampling, etc. Duplicate meter readings are collected every 10th sample collected. (Sublette County Conservation District Pinedale Anticline Field Data 2000-2010).

The Wyoming Department of Environmental Quality has established surface water quality standards for all streams in the state. No exceedances of these standards have been detected from the data collected by the SCCD from 2000-2010 at the PA surface water sampling sites. **Non-detections** of all hydrocarbon parameters were observed for the same time frame.

<u>Parameter</u>	<u>Wyoming DEQ Water Quality Standard</u>
Alkalinity	None available
Bicarbonate	None available
Calcium	None available
Carbonate	None available
Chloride	Aquatic Life Chronic Value (EPA) 230,000 mg/l
Conductivity	None available
Dissolved oxygen	Minimum 4mg/l Class I & II Streams 6.6 mg/l – 9.0 mg/l *
Hardness	None available
Magnesium	None available
Nitrate	10 mg/l
pH	6.6 – 9.0
Phosphorus	≤ 1.0 mg/l (Streams not flowing directly into lakes or reservoirs)
Sulfate	None available
Temperature	None available
Total Suspended Solids (TSS)	None available
Turbidity	None available

Please note: Generally surface water quality standards are based upon fresh water fishery requirements for reproduction and juvenile and adult growth and survival.

Macroinvertebrates (aquatic insects) are collected at all nine PA surface water sites once per year. Macroinvertebrate samples collected at each PA surface water site are sent to a contract laboratory for identification. SCCD staff collected eight samples at each site during the 2010 field season using eight Surber samplers. All data collected were sent to an aquatic ecologist for identification and analysis. An assessment report with a projected publication date in September 2011 will be prepared using the 2010 macroinvertebrate samples and will be available to the PAWG at a 2011 fall meeting.

#### References

[http://deq.state.wy.us/wqd/watershed/surfacestandards/Downloads/Triennial/8-0464\\_Draft\\_%20Chapter\\_1.pdf](http://deq.state.wy.us/wqd/watershed/surfacestandards/Downloads/Triennial/8-0464_Draft_%20Chapter_1.pdf)  
<http://www.epa.gov/waterscience/standards/>  
[http://www.blm.gov/wy/st/en/field\\_offices/Pinedale/pawg/DataResults.html](http://www.blm.gov/wy/st/en/field_offices/Pinedale/pawg/DataResults.html)